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NEWCASTLE-UPON-TYNE, AND THE GREAT NORTHERN COAL-FIELD. I.

VIEW IN NEWCASTLE, WITH ST. NICHOLAS' CHURCH.

HISTORY OF NEWCASTLE—CASTLE AND TOWN WALLS—CHURCHES—LITERARY SOCIETIES.

NEWCASTLE-UPON-TYNE, which within the memory of man was not undeservedly called "the Coal-hole of the North," has within the present century become one of the most beautiful towns of England, rivalling the metropolis itself in its architectural decorations. Its situation on the crest of the eminences on the north side of the Tyne, pointed it out to the Romans as a desirable military post; and they occupied it to protect the Ælian bridge, and defend the flank of the wall erected to repel the invasions of the Picts and Scots. The modern bridge over the Tyne occupies the place of the Roman structure, and the termination of the Roman line of fortifications is still called Wall's End, a name sufficiently familiar to the citizens of London, who procure their best coals from a colliery in its vicinity. After the Saxon invasion, Newcastle became one of the chief seats of the kings of Northumberland, who adorned it with so many monastic institutions that it received the name of Monkchester. When the Danes invaded England, a great body of them settled on the banks of the Tyne, and made Northumberland a principality enjoying a qualified independence. The Anglo-Danes were a more warlike people than the Saxons: they continued their resistance to William the Conqueror after the rest of England had submitted; but being defeated on Gateshead Fell, the cruel Norman levelled Monkchester with the ground. In the course of the Conqueror's subsequent wars with Scotland, the importance of having a fortress to protect the passage of the Tyne became apparent, and a new castle was erected by Robert Curthose, the Conqueror's eldest son, on the height which commands the bridge, and from this structure, which still exists, the town derives its present name. During the wars between the English and Scotch many sanguinary battles were fought in the vicinity of Newcastle, and it is plausibly conjectured that many of the pestilences which wasted the town during this period were caused by the heaps of slain left unburied, or but partially buried, after these ruinous combats. But it is not necessary to dwell upon these almost forgotten struggles; and we turn with pleasure to a much more important and interesting subject, the origin of the coal-trade, to which Newcastle owes its wealth and celebrity.

The first notice on the subject is found in a charter of Henry III., which grants permission to the burgesses of Newcastle to work the coal-mines in their neighbourhood. So eagerly did they avail themselves of this grant, that in 1306 the parliament complained to the king that the atmosphere of London was dangerously infected by the burning of northern coals, and begged that the use of this fuel should be restrained; and in 1325 coals were exported from Newcastle to France.

During the long struggle between Charles I. and his parliament, the citizens of Newcastle were distinguished by their fidelity to the royal cause; and when the unfortunate monarch had surrendered to the Scotch, and was brought a prisoner into the town, they received him with all the usual honours of royalty, and showed much sympathy for his sufferings. One anecdote of the fallen monarch, during his captivity at Newcastle, deserves to be recorded. In order to conciliate the Scotch, Charles was constant in his attendance at Presbyterian places of worship, although the Scotch preachers virulently assailed him from the pulpit, and ascribed his misfortunes to the vengeance of heaven. One minister, after a sermon

full of coarse personal reproaches of his majesty, called for the fifty-second psalm, which in the Scottish version begins—

Why dost thou, tyrant, boast abroad,
Thy wicked works to praise? —

upon which the king stood up, and called for the fifty-sixth psalm—

Have mercy, Lord, on me, I pray,
For man would me devour.

The congregation, in defiance of the tyranny then exercised by the presbyterian clergy, showed greater deference for fallen royalty than for the minister, by singing the psalm for which the king had called.

At the time of the Revolution the people of Newcastle were conspicuous for their zeal to establish a protestant government. They hurled into the river a beautiful statue of James II. in copper, which had had been erected in front of their Exchange; and when it was subsequently taken up, they used the metal to cast bells for the churches, as we find by the following curious entry in the books of the corporation:—"Ordered, that All Saints have the metal belonging to the horse of the said statue, except a leg thereof, which must go towards the new casting of a bell for St. Andrew's parish." Ever since that time the burgesses of Newcastle have been zealous adherents to the Hanoverian succession, and have embraced every opportunity of proving their loyalty.

Turning from the history of Newcastle to a description of its present condition, the most remarkable characteristic that we observe is the mixture of ancient and modern styles; all the features of an old feudal garrison existing amidst the bustle of commerce, the most sumptuous modern edifices, and a forest of masts from every quarter of the globe. This is peculiarly remarkable in the vicinity of the Castle, which, though frequently altered and repaired, has not lost much of its original character as a border fortress. Its chapel especially is an exquisite specimen of the rich and beautiful style of architecture adopted by the Normans in their ecclesiastical edifices, and there is no difficulty in tracing

The battled towers, the donjon keep,
The loophole grates where captives weep,
The flanking walls that round it sweep.

These outer walls were of great strength, and enclosed an area of three acres and one rood. The grand entrance was through the Black Gate, which was an outwork of considerable strength, defended by two portcullises, two drawbridges, and two barbicans, or flanking towers. Its remains are so surrounded by masses of houses huddled together without system or design, and by no means remarkable for their cleanliness, that it is difficult to determine its dimensions. There were three other entrances through posterns; the southmost of which led to the Castle Stairs, an immense flight of steps leading from the top of the hill to the river, with houses at each side, nearly all of which are tenanted by cobblers, so that the visiter can scarcely divest himself of the notion that he is ascending or descending a pyramid of old shoes.

The town-walls were twelve feet high on the inside, and eight feet thick; their extent from end to end was about two miles and one-eighth; they were defended by embattled gates and bastion towers, which, united to the natural fortifications of the Ouseburn glen and Pandon Burn ravine, rendered Newcastle one of the strongest places in England. Since 1745, the last time that they were put into a state of defence, great masses of the fortification have been removed, either to open commercial thoroughfares, or to make room for new edifices. However we may be pleased with modern improvements, we cannot but lament the destruction of the memorials of antiquity, especially when their removal is not demanded by imperative necessity. The removal of Westgate in 1811 was not, we think, required by public convenience; we wish that this monument of the wealth and munificence of Roger de Thornton had been spared. It is said that he rebuilt and beautified this gate to commemorate the time when he entered the town in a state of great indigence, as the rhyming tradition states,—

At the West gate came Thornton in
With a hap, a ha'penny, and a lamb-skyn.

The more recent removal of Newgate in 1822 was opposed by many of the inhabitants, who appealed in vain to the council for its preservation, but since that time the people of Newcastle have become chary of their remaining antiquities, and anxious to preserve all existing memorials of the time when their town was the great fortress of the North.

Among the ancient edifices of Newcastle, the church of St. Nicholas * is most conspicuous; the original structure, erected by Osmund, bishop of Salisbury, A.D. 1091, was destroyed by fire A.D. 1216, and the present building was not completed until A.D. 1359, since which it has received frequent and extensive repairs, not always in the best taste. The steeple of this church is one of the most singular creations of Gothic architecture; from the base of the four pinnacles on the top of the tower spring two lofty arches which intersect each other, and bear on their vertex a light square lantern, decorated with pinnacles similar to those of the tower. From the top of the lantern a tapering pyramidal spire rises tipped with a light vane, which gracefully harmonizes with the surrounding pinnacles. No description can convey an adequate idea of its effect, and accordingly Ben Jonson amused himself by describing it in the following enigma, which has been preserved traditionally, and is therefore pobably corrupted:—

My altitude high, my body four-square,
My feet in the grave, my head in the air,
In my sides are my eyes, I've five tongues of my own,
Thirteen heads on my body, and all of hewn stone;
I can direct you where the wind it doth stray,
And I tune God's precepts through twice in the day;
I am seen where I am not and heard where I is not,
Tell me now what I am, and see that you miss not.

St. Andrew's Church is said to have been erected by David, king of Scotland, who occupied Newcastle from 1135 to 1153; it suffered considerable damage in the siege of 1644. This church, and those of St. John's and All Saints, have been so modernized, that they have quite lost their original character.

Passing over the episcopal chapels and those belonging to various classes of dissenters, we shall now direct attention to the edifices built for secular purposes, and first notice the Guildhall, or Exchange. This edifice is situated in the lower and old part of the town, on the Sand-hill, near the south entrance of the town by Tynebridge. The houses in the neighbourhood are interesting and picturesque specimens of the old English style of architecture, but they are in many cases crowded together and pierced by lanes and passages, dark, dirty, and inconvenient. The original edifice was erected by Robert Trollop, an eminent architect. He lies buried in Gateshead churchyard, on the opposite side of the river, and the following quaint epitaph alludes to his building the Guildhall and Exchange:—

Here lies Robert Trollop,
Who made yon stones roll up;
When death took his soul up,
His body filled this hole up.

* See *Saturday Magazine*, Vol. III., p. 41.

Trollop added to these buildings a picturesque tower or steeple, said to have been very beautiful; but it was removed at the close of the last century, and its place supplied by an unmeaning front of plain masonry. The old tower obtained some notoriety from the circumstance of a pair of crows having built their nest on the weathercock in March, 1783. The nest was attached with great ingenuity to the hollow tube on which the vane was then fixed, and the nest was therefore turned round with every change of the wind; for several years the same crows built their nest and reared their young ones in this singular position.

The Mansion House is not far distant from the Exchange; it was rebuilt in 1691 at a cost of 6000*l.*, and was fitted up very sumptuously; its wainscots and staircase of carved oak are particularly worthy of notice. After the Municipal Reform Act, the new town council came to a resolution not to continue the establishment; the furniture was sold by auction, and the mansion itself let as a lumber warehouse. Fortunately the present tenant takes all possible care of the carvings and decorations, but he cannot prevent the accidents resulting from the passing and repassing of labourers with heavy loads, and unless the staircase and wainscots be speedily removed, their destruction is inevitable.

Newcastle being a county in itself, it has courthouses of its own in the Town Hall; but the courthouses for the county of Northumberland are erected on the Castle Hill, at a very inconvenient distance from the Town Hall; the nearest communication between them being up an almost precipitous ascent. The county courts are very convenient and elegant, but as they are within the precincts of the old castle, the access to them is very unpleasant. It has been proposed to erect both town and county courts in one building in the new part of the town, and it is to be wished that this useful improvement may encounter no obstacle from local interests or prejudices.

The Library of the Literary and Philosophical Society, stands near the junction of Westgate-street and Collingwood-street. No provincial town in Britain, and perhaps not even the capital itself, possesses an institution better managed, and in every way more creditable to its founders and supporters, than the Literary and Philosophical Society of Newcastle. It was founded in the year 1793, principally by the exertions of the Rev. William Turner, who still survives to witness its beneficial effects. The street front gives a very inadequate notion of the extent of the accommodations within. The principal entrance is from Westgate-street. The ground-floor contains a law library, a medical library, a spacious lecture-room, capable of accommodating five hundred persons, and an apparatus-room containing an extensive selection of chemical, electrical, optical, and mechanical instruments, for the use of lecturers and the members generally. The separation of the professional from the general library is a very great advantage; it is obviously capable of further extension, and we believe it is contemplated to add both military and naval libraries, amply provided with plans, maps, charts, &c. A handsome double staircase, ornamented with casts from the Elgin and other marbles, leads to the principal floor of the building. The library is eighty feet in length, by forty in breadth, and is forty feet high; it contains nearly fourteen thousand volumes. The books are allowed to circulate among the members, who may, if they choose, take out all the volumes of any work at the same time. The council, with very creditable liberality, affords additional facilities to persons engaged in preparing works for the press, such as permitting them to have several sets of books at a time, and to retain them for a longer period than ordinary readers. In the library are two noble pieces of statuary, the work of a native artist named Lough, who worked as a stone-mason at the building of the library, but who has since carried a very high reputation by his works as a sculptor. It contains, also, the busts and portraits of several eminent persons, mostly natives of Newcastle.

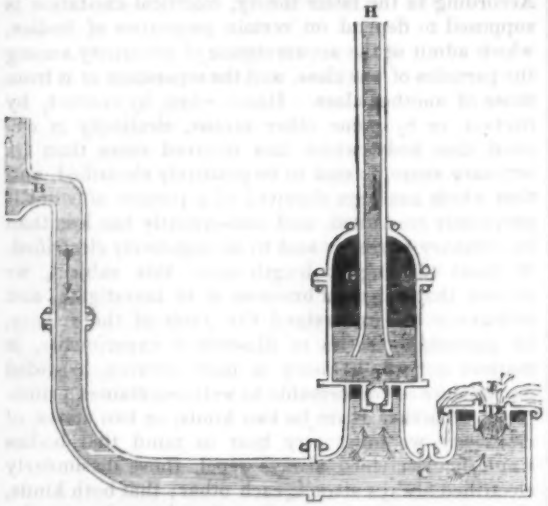
The rooms of the Natural History Society adjoin the library, and comprise a Museum of Natural History, a Geological Museum, the meeting-room of the Antiquarian Society, a room of Egyptian antiquities, a gallery of Roman altars, &c., and several store-rooms. All these are open to the public, free of charge, every day except Sunday, from eleven to four o'cock; they are, also, occasionally opened in the evening, to afford labourers and mechanics an opportunity of visiting them; and it is truly gratifying to add, that for several years no instance of ingratitude or dishonesty has occurred. It deserves to be added, that the taste for literature is widely disseminated in Newcastle, and that the average sale of books in proportion to the population, is greater than in any other part of the world.

THE HYDRAULIC RAM.

The Hydraulic Ram is a simple machine, by which water can be raised to a considerable height above its natural level; it is more frequently employed in France than in this country, but the simplicity of its construction, combined with its self-acting power, make it a desirable means for its intended purpose, where there is an abundance of water, and where the water which it would otherwise waste can be employed for other purposes. Montgolfier, the celebrated aëronaut, was the inventor of the Hydraulic Ram. He had observed, that if water was conducted, by means of a leaden pipe, from a cistern placed at a considerable height, immediately its flow was stopped by turning the cock, a sudden shock was felt, which, in many cases, would burst the pipe by its violence; this arose from the impetus the water had received in its descent being suddenly checked; reasoning on this fact, he contrived to avail himself of this power, which would otherwise have been lost, in the construction of his Hydraulic Ram.

Professor Millington mentions a circumstance, which produced similar results, and which occurred before Montgolfier's invention, It was necessary to conduct the water from a cistern, placed about halfway between the ground and the top of a large building in Bristol, to a place in the lower part of the house; this was effected by means of a long leaden pipe, but it was found that almost every time the cock was turned the pipe burst. To remedy this, a smaller pipe was soldered to the lower end of the supplying pipe, and conducted upwards to the cistern from which the water descended; this was done to prevent the waste of the liquid. When the success of this contrivance was put to the test, it was found that the force acquired by the water in its descent, was not only more than sufficient to drive a portion of it back again to the cistern through the smaller pipe, but capable of carrying a jet of water to a considerable height above that level; the small pipe was then continued to a considerable height farther, but still a jet of water was produced; advantage was taken of this result, and a reservoir of water was kept constantly supplied at the top of the house without any additional exertion. Many improvements have been made

in the Water Ram since it was originally constructed, and the annexed engraving, although not representing one of the most modern construction, will, perhaps, render the principle on which it acts more intelligible than if a more complicated machine were referred to.



Let A be the reservoir from which the water is derived; this will flow along the pipe B C with a velocity equal to the perpendicular height from B to C. The water flowing along the level part of the pipe C, will at first escape through the opening at E, but it will quickly by its force raise the hollow brass ball, or valve, D, so as to close the opening at E, and prevent its further escape; thus checked in its course, it presses with a sudden jerk against the valve F, which it raises from its support, and opens a way for its escape into the chamber G, and the ascending tube H; as soon as the effort of the water is exhausted, the valve F sinks into its bed, and prevents the water that has been introduced into the chamber above it from returning into the pipe B C. At the same time the valve D, falls into its bed, and leaves the hole at E open; the water again escapes for a time, again lifts the valve D and closes the opening, and again rushes into the chamber G, and this reciprocating action continues as long as water is supplied from the cistern A. The upper part of the chamber G is occupied by air, which, being compressed by the entrance of the water, by its elasticity assists in forcing it up the tube H. The number of strokes produced by these machines varies much, but they amount not unfrequently to from fifty to seventy in a minute. The loss of water when not wanted for other purposes is considerable, varying to from fifty to thirty per cent. of the total quantity discharged from the reservoir.

A MAN would do well to carry a pencil in his pocket, and write down the thoughts of the moment. Those that come unsought for, are commonly the most valuable, and should be secured, because they seldom return.—LORD BACON.

THOSE who know the value of human life, know the importance of a year, a day, and even an hour; and these, when spent amid the full enjoyment of the vital functions, of how much importance to our whole existence! It is therefore an eternal and irreparable loss, when time is not enjoyed as it ought.—STRUVE.

WE ought, in humanity, no more to despise a man for the misfortunes of the mind, than for those of the body, when they are such as he cannot help; were this thoroughly considered, we should no more laugh at a man for having his brains cracked, than for having his head broke.—POPE.

ELECTRICITY.

No. IV.

ELECTRICAL MACHINES.

HAVING described electrical machines, as they are usually constructed, we shall next endeavour to give some account of what we consider the best means of operating with them; explaining as we go along the use of each particular part of these instruments.

We begin with a cylindrical machine, which we must suppose to have been carefully cleaned, some fresh amalgam applied to the rubber, and the framework of the machine secured by a clamp to a strong table. The latter should be so placed that it may not be in contact with the walls or furniture of the room, and, if it can be avoided, not near a window, nor in a direct line between the fire-place and the door.

These arrangements being completed, if the machine is in good order, on turning the cylinder, its motion will be accompanied by a crackling noise, and, if the room be darkened, flashes of pale white light will be seen to issue from between the cylinder and the rubber, which passing underneath the silk flap, will illuminate the points on the side (or end) of the prime conductor.

To give proper effect to the machine, it is necessary that the negative conductor (that to which the rubber is attached) be made to communicate, by means of a small chain, with the wall or floor of the room; which being done, the electricity excited can only be received from the positive conductor; and it is in consequence called positive electricity. This will be shown by holding the knuckle near to the positive conductor, when brilliant sparks will pass from it in rapid succession, producing a sharp snapping sound, and causing in the hand a sensation of pain, greater in proportion to the space which the spark traverses. So long as the conditions remain as we have just described them, on presenting the knuckle to the negative conductor, no spark will be emitted by it; but if the chain by which it communicates with the floor be removed, and attached in a similar manner to the positive conductor, then will sparks pass between the knuckle and the negative conductor, and not from the other; and the electricity excited by the machine under these circumstances is called negative electricity.

We have already stated that an electrical machine is composed of two classes of materials, called, in reference to their electrical habits, or properties, non-conductors and conductors. Thus, by the judicious combination of dried wood, glass, hair, and silk, which belong to the first-mentioned class of bodies, and of brass, or some other metal, belonging to the second class, we are enabled to excite electricity in any required quantity, detaching it for a time from substances with which it was previously united, and compelling it to enter others in such quantities as to produce effects, which, under ordinary circumstances, and without such powerful agency, we have no opportunities of witnessing.

The source of electricity, as obtained by the machine, is the glass cylinder, the materials composing the rubber, and the amalgam interposed between it and the cylinder. But although the glass and the rubber are what are termed electrics, and, consequently, very susceptible of electrical excitation, it would be impossible to obtain by them electricity in any considerable quantity, or to have it at all under control, if the conductors, as well as the other parts of the machine just referred to, were not *insulated*, that is, detached, in an electrical sense, from the floor, and all surrounding substances. This object is

effected by means of the glass pillars which support the cylinder and conductors, and the necessity for which will be seen in a moment on attaching a chain to both conductors, thus making them communicate with the floor. In that case the electricity excited by the friction of the cylinder against the rubber will pass from the negative to the positive conductor, and thence down the chain to the floor, so that it will be impossible to obtain the slightest indication of its presence. The same will happen if we connect the two conductors, by a chain or wire, without letting it touch the stand of the machine; the electricity then passing from the negative to the positive conductor, and back from the positive to the negative, in an uninterrupted circuit, so long as the rotation of the cylinder continues.

But whilst the efficiency of an electrical machine is destroyed by connecting *both* conductors with the floor, or with each other, it is necessary that *one* of them should be in communication either with the floor or the walls; and as it is more convenient to operate with the positive than with the negative conductor, the latter most commonly has a chain attached to it, as already described. The use of this chain is to keep up a supply of electricity to the rubber, for without it, after turning the cylinder for a few minutes, the machine would become almost inactive, in consequence of the electricity of the rubber being exhausted. It is true that electricity is always present in the atmosphere, sometimes in greater proportions than at others; but as air is a very slow conductor, excepting when it is heavily charged with moisture, the supply from thence would be inadequate and uncertain. From the earth electricity may be obtained in any required quantity, at all times, and in all places.

Before we proceed further, it may be as well to enter a little more into detail respecting positive and negative electricity. We have shown that when glass and silk, or sealing-wax and woollen cloth, are rubbed against each other, electrical excitation ensues; that produced by the friction of the two former being called positive, that of the two latter, negative, electricity. We have also stated that on holding an excited glass rod near to a feather, or other light substance, placed under favourable circumstances, the latter is first attracted and then repelled. The same happens when excited sealing-wax is used in a similar manner. If, however, the excited glass and wax are alternately brought near the feather, it will be found that when repelled by the glass, it is invariably attracted by the wax, and when repelled by the wax, it is with equal certainty attracted by the glass. Hence we learn that whenever the electricity excited upon glass is communicated to some other substance, that substance immediately exhibits a repulsive habit in reference to all others similarly electrified; whilst with equal energy, but of an opposite kind, it attracts substances in a quiescent state, as it does also those imbued with electricity produced by the friction of wax.

In every instance of electrical excitation two or more substances are necessarily concerned; and it is important to remember that the rate (or amount) of disturbance in the electrical relations of bodies, is equally great in what is termed the *exciting* body, as it is in that *excited*; nor is it possible, under any circumstances, to produce one state (or kind) of electricity, without producing by the same means, at the same time, and to the same extent, the other. Thus, by rubbing a rod of glass with a silk handkerchief, the glass becomes positively, and the silk negatively, electrified. Adopt a similar process with red sealing-wax and woollen cloth, the wax will be negatively and the cloth positively, electrified.

It is difficult to define the precise meaning of the terms *positive* and *negative*, as applied to electrical phenomena. Some maintain that there are two distinct kinds of electricity. Others contend that there is only one kind, which exists in opposite states. According to the latter theory, electrical excitation is supposed to depend on certain properties of bodies, which admit of the accumulation of electricity among the particles of one class, and the separation of it from those of another class. Hence when, by contact, by friction, or by some other means, electricity is excited, that body which has received more than its ordinary share, is said to be positively electrified, and that which has been deprived of a portion of what it previously contained, and consequently has less than its ordinary share, is said to be negatively electrified. Without entering at length upon this subject, we remark that our chief business is to investigate, and endeavour to understand the *facts* of the science. In pursuing a series of illustrative experiments, it matters not which *theory* is most correct, provided our *practice* is conformable to well-ascertained principles. Whether there be two kinds, or two states, of electricity, we must ever bear in mind that bodies similarly electrified always repel, those dissimilarly electrified always attract, each other; that both kinds, or states, of electricity, are produced simultaneously, and in equal proportions; and that the electricity we intend to operate with can be subjected to our control only by means of an insulated or non-conducting substance.

In the cylindrical machine the rubber is always negative, the cylinder always positive; the hair with which the rubber is made, and the silk flap attached to it, answering precisely the same purpose in reference to the cylinder, as a silk handkerchief does in reference to a glass rod. By the insulation of the negative conductor we are enabled to operate, if we wish to do so, with negative electricity; but if there be only one kind of electricity, that which appears to proceed *from* the negative conductor must in reality be passing *towards* it. Excepting for the sake of illustrating a few matters connected with the elements of electrical science, there is no necessity for a negative conductor. The plate machine for general purposes is more convenient, more easily excited, and with the same amount of labour yields a greater quantity of electricity than the cylindrical machine. In the plate machine, as it is commonly made, the only part requiring to be insulated is the conductor. The electrical relations of the rubbers and the plate are the same as we have just described; but although we know the rubbers are charged with negative electricity, we have no means of exhibiting its effects separately. The rubbers of the plate machine being in contact with the frame of the machine, they of course communicate directly with the floor. In this respect they resemble the rubber of the cylindrical machine when a chain is attached to the negative conductor. It will therefore be seen that the action of both machines is exactly alike when positive electricity is required from them.

He that wants good sense is unhappy in having learning, for he has thereby only more ways of exposing himself; and he that has sense, knows that learning is not knowledge, but rather the art of using it.—Tatler.

Though every old man has been young, and every young one hopes to be old, there seems to be a most unnatural misunderstanding between those stages of life. This unhappy want of commerce arises from the insolent arrogance or exultation in youth, and the irrational despondence or self-pity in age.—Steele.

ON THE ESTABLISHMENT OF NIGHT GUARDS, OR WATCHMEN.

IN proportion as a town increases in population and wealth, we naturally acknowledge the necessity for making some provision for the protection of persons and property, at those hours when the inhabitants are least able to protect themselves. Consequently, we find that from the earliest establishment of municipal bodies, arrangements, more or less judicious, have been made for the establishment of a system of night-guard or watching.

There are several allusions to watchmen in the Song of Solomon and in the Psalms, which show that the Jews had such guards in their towns. At Athens, sentinels were posted at different parts during the night; and overlookers went round at intervals, to see that they were at their posts: the overlookers used to ring a bell, which the sentinels were obliged to answer. There were at Rome, under the names of *Triumviri nocturni*, *Cohortes vigilium*, &c., men who guarded the streets during the night, as well to give alarm in case of fire, as to keep depredators in awe.

The custom of causing the watchmen to call out the hours during the night, seems to have sprung up in Germany, after the erection of walled cities and towns. In the feudal and baronial ages, towns were often surprised by hostile troops in the night; and to lessen the liability of being so taken unawares, watchmen or sentinels were placed, generally on elevated positions. The custom of calling out the hour was probably established with the view to furnish some test, by which the inhabitants might know that the watchmen were vigilant and at their posts. With regard to the earlier cities, such as Rome, even if they had watchmen, it was not so easy for them to announce the hours during the night. Clocks and watches were not then invented, and sun-dials could only be used during the continuance (and that unclouded) of the sun above the horizon. During the day, the inhabitants could know the hour by means of public *clepsydræ* or water-clocks, which were kept in open buildings in various parts of Rome. These water-clocks indicated the time by the trickling of water through a small orifice; but as they were not likely to be visited by the inhabitants during the night, it does not appear that there was any means of knowing the hour at those times. When, however, the walled towns of Germany and the Low Countries came into note, the night-watchmen, in addition to their more important duty, announced the hour.

A nightly guard was established at Paris so early as the year 595. The citizens were obliged to keep watch in turns, under the command of a *Miles Gueti*, who was also called *Chevalier*. From this inconvenient duty the inhabitants frequently freed themselves by paying a sum of money; until, at length, a body of night-guards was established.

A traveller in the East, in the last century, speaks of a curious mode of night-watching in Japan. The watchmen used to have ropes with knots tied in them at intervals: the rope, when kindled, would burn or smoulder away slowly, and when it had burned to a knot, the watchman announced the hour, (or whatever other interval of time it might be,) by striking two flat boards together.

Montagne, speaking of the German towns about the end of the sixteenth century, says, "The watchmen went about the streets in the night time, not so much on account of thieves, as on account of fires and other alarms. When the clocks struck, the one was obliged to call out loud to the other, and to ask what it was o'clock, and then to wish him a good night." These watchmen had in some cases horns, and in others rattles; the former generally for villages, and the latter for towns. The rattles which the watchmen of London carried a few years ago, seem to have been of German origin, since a body called the *Ratelwache*, or rattle-guard, was established at Hamburg in 1671.

There appears to have been one species of watchmen which has never been introduced in England; that is, steeple or tower-watchmen. These were men who were posted in church steeples, or on high towers, and who had to blow their horns at the expiration of every hour. The custom prevailed in Germany in the sixteenth and seventeenth centuries. At first the inhabitants themselves had to fill this office by turns; but in process of time, a paid body of men, who were generally the town-pipers, or town-musicians, relieved them from this duty. A police order was made at Berlin in 1580, by which the steeple-watchmen were allowed to attend at weddings with music, for the accustomed pay, but only till the hour of nine at night, in order that they might then blow their horns on the steeples, and commence their nightly watch. In some German towns the regulations were so strict, that the steeple-watchman had a room built for him in or near the steeple of the church, from which he was not permitted to descend.

Most of our readers are familiar with the custom of Christmas "waits," playing music and calling out the hour on several consecutive nights preceding Christmas-day. These waits were originally a sort of watchmen in the court-yards of the palaces of the nobility, some centuries back; and Rymer gives the following curious account of the pay and privileges of the waits in the king's court, in the reign of Edward the Fourth.

A Wayte, that nightelye from Mychelmas to Shreve Thorsdaye pipethe the watche within this courte fower tymes; in the somere nyghtes iij tymes, and makethe bon gayte at everie chambere-doare, and office, as well for feare of pyckeres and pillers. He eateth in the halle with mynstrielles, and takethe lyverey at nyght a loffe, a galone of alle, and for somere nightes ij candles pich, a bushel of coles; and for wintere nightes half a loafe of bread, a galone of alle, iiij candles piche, a bushel of coles; daylye whilst he is presente in courte for wages in cheque roale allowed iiij*d.* or else ij by the discresshon of the steuarde and tressorere; and that, aftere his cominge and diseruinge; also cloathinge with the household yeomen or mynstrielles lyke to the wages that he takethe; and he be syke he taketh twoe loves, ij messe of great meate one galone of alle. Also he partethe with the householde of general gyfts, and hathe his beddinge carried by the comptrollers assygment; and under this yeoman to be a groome watere. If he can excuse the yeoman in his absence, then he takethe rewarde, clothinge, meate, and all other things lyke to other grooms of houshold. Also this yeoman-wayghte, at the makinge of knightes of the bathe, for his attendence upon them by nyghte tyme in watchinge in the chapelle, hathe to his fee all the watchinge-clothinge that the knighte shall wear uppon him.

Thus, we find, that these waits were a kind of minstrel-watchmen attached to the establishments of the great. In later times, when baronial customs were on the decline, the waits emerged from the court-yards, and perambulated the streets,—became, in fact, tradesmen on their own account, instead of being retainers of great families. At present they have entirely lost the character of watchmen, although, in the intervals of their tunes, they still continue to call the hour.

Permanent watchmen, however, gradually became introduced into England. These watchmen, as most persons will remember, were appointed, paid, and regulated, either by the corporation of the town in which they served, or by the authorities of the dif-

ferent parishes in those towns, each parish regulating its own watchmen. The old watch-boxes have left their impression on the mind, as little domiciles in which the watchmen rested—and perchance slept—at intervals between going their rounds. A material and judicious alteration, the nature of which we need not particularly describe, has been made, within a few years, in the night-guarding of the public streets, by the establishment of the Metropolitan Police.

The regulation of the police in Paris and other French towns, whether for day or night watch, savours more of military discipline than anything of the kind which we have in England: the system of espionage is, indeed, so strict, that it is doubtful whether it would suit the notions and habits of our countrymen. We should be apt to think it an interference with private rights, if the owner of an hotel had to render up to the police a list of the names, professions, &c., of all the persons who might come to take up their abode, even for a single night, in their houses: yet such is the case in Paris.

MONDAY'S EXPENSES.

In many of our villages, in all our manufacturing towns, and more especially in the overgrown metropolis of London, the grand emporium of the world, a great number of workmen, of all descriptions, follow the baneful habit of making a holiday, as it is falsely termed, on Monday, for the purpose, not of being surrounded by their wives and families, and assisting their labours, but of wasting in a public-house those hours which would have been much better, and more profitably employed in their workshops. It is even not a rare occurrence to observe those unfortunate beings who take also the Tuesday, nay even in some instances the Wednesday, for the same hateful occupation. Independent of the habits of idleness and of debauchery which they necessarily contract in such scenes and occupations, they invariably ruin their health, enervate their strength, and bring on premature old age. Nor do the direful effects stop here; for should a panic happen, or a stagnation of trade arise, from any of those innumerable causes which from time to time agitate the commercial world, so as to compel the great manufacturers, or wholesale houses, to lower their establishments, those holiday-making workmen would be among the first that would be removed from their situations, and refused employment; and they would have only themselves to accuse for all the misery which they would thus have brought upon themselves and upon their families.

But there is another consideration, merely matter of computation, which ought never to be lost sight of. If we estimate the day's work of a mechanic or workman at three shillings, and what he spends during his day's holiday-making every Monday at two shillings, which is certainly not exaggerating the facts in the generality of instances, it is clear that he who *only* throws away the Monday, will be out of pocket at the end of the week five shillings, besides what may be lost by other means, or by the rules of the establishment to which he belongs. In many instances must also be added the loss of situation and character, or at any rate the smaller gains of the Tuesday, as few men are capable of working properly the day after a debauch. Now as there are fifty-two weeks in a year, it follows that such a workman loses in the course of the year *two hundred and sixty shillings* as his *mere expenses of the Monday*, independent of those of his family. If, however, instead of dissipating the Monday, he, like the more provident and wiser workman, prudently placed this sum of money in the neighbouring Savings' Bank, he would assure to himself that certain resource for his old age, without which he will only fall into misery and regret, and his gray hairs go down with sorrow to the grave. A person who abstains from those useless Monday holidays, and carries to the Savings' Bank every week that sum of money, which otherwise would have been lost, as before shown, will, at the end of only seven years, have accumulated no less a sum than one hundred pounds.

May the workmen and mechanics who read this reflect seriously upon what has been stated; and for the future, if they have not already, adopt habits of regularity and economy, without which it is impossible for them to continue respected, comfortable, or happy. May they remember, and avail themselves of the advantages offered by the Savings' Banks of the kingdom; "for," to use the words of a well-known address, "these banks receive just what each person can spare, and when and as long as he can spare it—a shilling or a pound more or less, weekly or monthly, or quarterly, or now and then, just as it happens." There at all times the fruits of industry may be safely housed, and what is more, while there they remain, they are certain to be on the increase. If it please God to spare a person's life, he will go on increasing his store and his respectability. In health and in sickness he will have no wants but what his own funds can supply. Secure from distress himself, he may be able to relieve (as not unfrequently happens) the distress of a relation or friend; and when he dies, will leave his little property to his children, or other relatives, and his good example with it. The present great advantages derived from Savings' Banks in this country may be partially estimated from the fact of considerably more than the enormous sum of twenty millions of money being invested in them. To the manifold benefits arising from them to families of the labouring classes the writer of this can fully testify, having frequently heard them admitted by the parties, with tears of joy in their eyes. F. I. F.

Religion has been sometimes decried as the passion of weak men, women, and children. Woman may blush for the association which the ridicule involves, but she has no reason to be ashamed of her propensity. May it ever be her distinction! It is the heart which adorns as well as enriches.—Mrs. John Sanford.

Those disasters which break down the spirit of a man, and prostrate him in the dust, seem to call forth all the energies of the softer sex, and give such intrepidity and elevation to their character, that at times it approaches to sublimity. Nothing can be more touching than to behold a soft and tender female, who had been all weakness and dependance, and alive to every trivial roughness, while treading the prosperous paths of life, suddenly rising in mental force to be the comforter and supporter of her husband under misfortune, and abiding, with unshrinking firmness, the bitterest blasts of adversity. As the vine which has long twined its graceful foliage about the oak, and been lifted by it in sunshine, will, when the hardy plant is rifted by the thunder-bolt, cling round it with its caressing tendrils, and bind up its shattered boughs; so is it beautifully ordered by Providence, that woman, who is the mere dependant and ornament of man in his happier hours, should be his stay and solace when smitten with sudden calamity; winding herself into the rugged recesses of his nature, tenderly supporting the drooping head, and binding up the broken heart. I was once congratulating a friend, who had around him a blooming family, knit together in the strongest affection. "I can wish you no better lot," said he, with enthusiasm, "than to have a wife and children: if you are prosperous, there they are to share your prosperity; if otherwise, there they are to comfort you."—?

THE BLACK RAT.

The Black Rat, although at present nearly extinct, was originally the common species in this country. The Brown Rat, with which we are so well acquainted, is said to have made its first appearance in England about the middle of the sixteenth century, but authors are undecided as to the country from which it was brought; since its introduction it has rapidly increased, and its black kinsman is rarely met with.

This increase of one, and disappearance of another, species, may be partly attributed to the greater size of the Brown Rat, who, in the wars that take place in times of famine, generally comes off victorious. The principal haunts of the Black Rat at present are in old houses, in large cities, such as London and Edinburgh, where sometimes considerable numbers exist. "It forms its runs between the walls of houses, and under the stone and brick flooring of cellars, coming forth in the night in search of food."

Although (says Mr. Bell) their disposition appears to be naturally exceedingly ferocious, there are instances on record of their evincing considerable attachment, not only to each other, but to mankind. Mr. Jesse, in his usually amusing and pleasant style, gives us an anecdote, which the respectable authority from which he derived it forbids us to doubt, exhibiting a degree of tenderness and care towards the disabled and aged members of their community, which were it imitated by Christian men, would either render our Poor-laws unnecessary, or remove the disgrace and opprobrium which their mal-administration too often causes to attach to them. His informant, the Rev. Mr. Ferryman, walking out in some meadows one evening, "observed a great number of Rats in the act of migrating from one place to another, which it is known they are in the habit of doing occasionally. He stood perfectly still, and the whole assemblage passed close to him. His astonishment, however, was great, when he observed an old blind Rat, which held a piece of stick at one end in his mouth, while another Rat had hold of the other end of it, and thus conducted his blind companion."

The name given to this Rat by the Welsh, signifying "French Mouse," renders it probable that, whatever may be its native country, it was introduced here from the French coast. From Europe it has been sent with the Brown Rat to America, the islands of the Pacific, and many other places, in some of which it has become already a serious inconvenience.

The tail of the Rat is very singular in its formation; it is covered with the appearance of small scales arranged in rings, between which stiff hairs appear, but too few in number to hide the scales from the eye. The food of the Rat is various, although, when it can obtain vegetable substances, such as grain and roots, it seems to prefer them to animal nourishment. Habit, however, frequently renders the Rats more decidedly carnivorous, and they become greedy devourers of putrefied substances, assembling in large numbers in drains and slaughter-houses.

Although the Black Rat is so well known in Europe at the present time, it is the opinion of many authors that the ancients were ignorant of its existence; from this it is inferred that its original country is America, from whence it was imported into Europe by the vessels that trade between the two continents; but when this first occurred is uncertain.

The Black Rat is still well known in the rural districts of France, where it is a complete scourge to the farmer, from the damage it commits, by gnawing linen, woollen goods, leather, harness, and fat substances of every description; in fact, almost everything that falls in its way. It is particularly fond of hog's-lard, and this substance is frequently employed as a bait in the traps which are set for its destruction.

A method of taking Rats was some years back resorted to with great success; it consisted in employing a simple wooden trap, with a door like a portcullis, capable of closing one end, the other end being left open. At first the door was propped up so as to prevent its falling, and malt slightly perfumed with oil of aniseed was spread near to the trap and inside of it, the Rats being attracted by the scent to feed on the malt; fresh supplies were laid down every morning, till by degrees, becoming more confident, all the Rats on the premises resorted to the trap to partake of their savoury meal. When the animals had acquired perfect confidence, say in a week or ten days, the prop supporting the door was removed, and it was so contrived that it could be let down in an instant; a bag rubbed with the oil of aniseed was also tied on to the open end, and the Rats coming to their usual meal would soon fill the trap; the door was then let down quickly but gently, and the trap with its prisoners removed. The Rats it contained were shaken into the bag, and a string being drawn round it to close its opening, it was detached from the trap and the Rats destroyed, taking especial care that not one escaped; a fresh bag was then tied to the trap, which was replaced in its original position, and another party of prisoners captured. In this manner, if proper precautions are used, nearly all the Rats in the neighbourhood can be taken.

If we hope to instruct others, we should familiarize our own minds to some fixed and determinate principles of action. The world is a vast labyrinth, in which almost every one is running a different way, and almost every one manifesting hatred to those who do not run the same way. A few indeed stand motionless, and not seeking to lead themselves or others out of the maze, laugh at the failures of their brethren, yet with little reason; for more grossly than the most bewildered wanderer does *he* err, who never aims to go right. It is more honourable to the head, as well as to the heart, to be misled by our eagerness in the pursuit of truth, than to be safe from blundering by contempt of it. The happiness of mankind is the *end* of virtue, and truth is the knowledge of the *means*; which he will never seriously attempt to discover who has not habitually interested himself *in the welfare of others*. The searcher after truth must love and be beloved; for general benevolence is a necessary motive to constancy of pursuit; and this general benevolence is begotten and rendered permanent by social and domestic affections. Let us beware of that proud philosophy which affects to inculcate philanthrophy while it denounces every home-born feeling by which it is produced and nurtured. The paternal and filial duties discipline the heart, and prepare it for the love of all mankind. The intensity of private attachments encourages, not prevents, universal benevolence. The nearer we approach the sun, the more intense his heat: yet what corner of the system does he not cheer and vivify?—S. T. Coleridge.

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